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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/647,984

08/26/2003

Tomasz Bogdan Madajczak

P16491

2484

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7590

06/23/2008

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EXAMINER

ZHU, BO HUI ALVIN

ART UNIT

PAPER NUMBER

2619

MAIL DATE

DELIVERY MODE

06/23/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/647,984	Applicant(s) MADAJCZAK, TOMASZ BOGDAN	
	Examiner BO HUI A. ZHU	Art Unit 2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed on March 14, 2008 has been entered.

Claims 1 – 44 are pending.

Claims 1 – 44 are rejected.

The 112 1st paragraph rejections of claims 24 - 32 have been withdrawn.

The 112 2nd paragraph rejections of claims 24 - 32 have been withdrawn.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 9 – 12, 21 – 23, 31 and 32 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

A claim drawn to a "medium storing program code" does not constitute statutory subject matter such as a process, machine, article of manufacture or composition of matter. In contrast, a claimed computer-readable medium encoded or embodied with a computer program product of code, or instructions, is a computer element which, when executed by a computer, defines structural and functional interrelationships between the instructions and the computer to permit the instructions functionality to be realized, and is thus statutory. Please see pages 30 and 53 of the Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility.

In addition, the “medium” in accordance with applicant’s specification may be an electromagnetic signal. This subject matter is not limited to that which falls within a statutory category of invention because it is not limited to a process, machine, manufacture, or a composition of matter. Instead, it includes a form of energy. Energy does not fall within statutory category since it is clearly not a series of steps or acts to constitute a process, not a mechanical device or combination of mechanical devices to constitute a machine, not a tangible physical article or object which is some form of matter to be a product and constitute a manufacture, and not a composition of two or more substances to constitute a composition of matter.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 – 40 are rejected under 35 U.S.C. 103() as being unpatentable over Potter JR. (US 2004/0187112) in view of Brown et al. (US 5,916,309).

(1) with regard to claims 1, 9:

Potter JR. disclose a method and system, comprising: receiving a network packet (buffer and queuing unit 210 receives network packets through TDM channel 215); receiving a portion of the network packet (dispatcher 404 receives a portion of the network packet); retrieving a sequence number and passing the sequence number to a

sequence election unit (paragraphs [0048], [0049] and [0052]; 408 is the sequence election unit); waiting to receive a signal ("HOL" status notification signal, paragraph [0055]) to process the packet from the sequence election unit and performing processing on the packet in response to receipt of the signal (paragraphs [0054] and [0055]).

Potter JR. does not disclose dividing the network packet into a plurality of m-packets, wherein a size of each of the plurality of m-packets is equal to an element size, and wherein the element size is associated with a receive buffer; and the portion of the network packet comprises one of the plurality of m-packets.

Brown et al. discloses dividing a network packet into a plurality of m-packets, wherein a size of each of the plurality of m-packets is equal to an element size, and wherein the element size is associated with a receive buffer; and the portion of the network packet comprises one of the plurality of m-packets (Fig. 2, reception buffers 51 – 58; also see column 9, line 56 - column 10, line 20; when multiple packets are transmitted within a time interval which can be viewed as one network packet consisting of smaller individual packets, the individual packets are separated upon reception and each is stored in an individual receive buffer, thus the size of each individual packet is associated with the receive buffer).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Potter JR. to implement multiple reception buffers as taught by Brown et al in order to make packets transmission and reception more efficient.

(2) with regard to claims 13, 21:

Potter JR. discloses a method and system, comprising: receiving a sequence number associated with an execution thread, wherein the sequence number is further associated with one of a plurality m-packets (paragraph [0048], [0049] and [0052]; every single packet of packets 424 to be registered by the dispatcher with the order manager is a m-packet; 402a is one execution thread); receiving a request for election from the execution thread (the request is by each thread 402 for being informed of head-of-line status in order to determine the processing order); determining whether the sequence number is less than sequence numbers associated with a respective other one or more execution threads (the sequence number being determined as the head-of-line sequence number is less than other sequence numbers of other threads); and transmitting an election signal to the execution thread if it is determined that the sequence number is less than the sequence numbers associated with the respective other one or more execution threads ("HOL" status notification signal is the election signal; paragraph [0055]).

Potter JR. does not disclose an m-packet comprises a network packet divided into a plurality of m-packets, wherein a size of each of the plurality of m-packets is equal to an element size, and wherein the element size is associated with a receive buffer.

Brown et al. discloses an m-packet comprises a network packet divided into a plurality of m-packets, wherein a size of each of the plurality of m-packets is equal to an element size, and wherein the element size is associated with a receive buffer (Fig. 2, reception buffers 51 – 58; also see column 9, line 56 - column 10, line 20; when multiple

packets are transmitted within a time interval which can be viewed as one network packet consisting of smaller individual packets, the individual packets are separated upon reception and each is stored in an individual receive buffer, thus the size of each individual packet is associated with the receive buffer).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Potter JR. to implement multiple reception buffers as taught by Brown et al in order to make packets transmission and reception more efficient.

(3) with regard to claims 24 and 31:

Potter JR. discloses a method and system, comprising: receiving a sequence number associated with an execution thread wherein the sequence number is further associated with one of a plurality m-packets (paragraph [0048], [0049] and [0052]; every single packet of packets 424 to be registered by the dispatcher with the order manager is a m-packet; 402a is one execution thread); determining whether a processing sequence associated with the sequence number is locked and transmitting an election signal to the execution thread if it is determined that the processing sequence is not locked (the sequence number being determined as the head-of-line sequence number is considered as it is not locked; the sequence numbers that are not the current head-of-line sequence number are considered as locked; "HOL" status notification signal is an election signal).

Potter JR. does not disclose an m-packet comprises a network packet divided into a plurality of m-packets, wherein a size of each of the plurality of m-packets is equal to an element size, and wherein the element size is associated with a receive buffer.

Brown et al. discloses an m-packet comprises a network packet divided into a plurality of m-packets, wherein a size of each of the plurality of m-packets is equal to an element size, and wherein the element size is associated with a receive buffer (Fig. 2, reception buffers 51 – 58; also see column 9, line 56 - column 10, line 20; when multiple packets are transmitted within a time interval which can be viewed as one network packet consisting of smaller individual packets, the individual packets are separated upon reception and each is stored in an individual receive buffer, thus the size of each individual packet is associated with the receive buffer).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Potter JR. to implement multiple reception buffers as taught by Brown et al in order to make packets transmission and reception more efficient.

(4) with regard to claim 33:

Potter JR discloses a system comprising: a packet processing engine (330 on Fig. 4) to provide a plurality of execution threads (402a — 402c on Fig. 4); a sequence number register (404 on Fig. 4) to provide a respective sequence number to one or more of the plurality of execution threads; wherein the respective sequence number is further associated with one of a plurality m-packets (paragraph [0048], [0049] and [0052]; every single packet of packets 424 to be registered by the dispatcher with the

order manager is a m-packetand); a sequence election unit (408 on Fig. 4) to elect one of the one or more of the plurality of execution threads based on sequence numbers provided to the one or more of the plurality of execution threads (paragraph [0049] and [0052]).

Potter JR. does not disclose an m-packet comprises a network packet divided into a plurality of m-packets, wherein a size of each of the plurality of m-packets is equal to an element size, and wherein the element size is associated with a receive buffer.

Brown et al. discloses an m-packet comprises a network packet divided into a plurality of m-packets, wherein a size of each of the plurality of m-packets is equal to an element size, and wherein the element size is associated with a receive buffer (Fig. 2, reception buffers 51 – 58; also see column 9, line 56 - column 10, line 20; when multiple packets are transmitted within a time interval which can be viewed as one network packet consisting of smaller individual packets, the individual packets are separated upon reception and each is stored in an individual receive buffer, thus the size of each individual packet is associated with the receive buffer).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Potter JR. to implement multiple reception buffers as taught by Brown et al in order to make packets transmission and reception more efficient.

(5) with regard to claims 2, 17, 25:

Potter JR. further discloses indicating to the sequence election unit that the processing is complete (paragraph [0082]).

(6) with regard to claims 3:

Potter JR. further discloses the processing must be performed in group order (paragraphs [0041] and [0049]).

(7) with regard to claims 4 and 30:

Potter JR. further discloses the processing comprises a critical section of a packet processing pipeline (see Fig. 4 for a packet process pipeline 400; processor 330, order manager 408 and dispatches 404 are all critical sections of the packet processing pipeline).

(8) with regard to claim 5:

Potter JR. further discloses requesting the signal from the sequence election unit (each thread 402 has to be informed of whether they are at the head-of-line of the order group, so they are requesting the status notification signal from 408).

(9) with regard to claims 6 – 8, 10 – 12, 14 – 16, 19, 27, 35, 36:

Potter JR. further discloses passing a mask associated with the sequence number to the sequence election unit, wherein the mask indicates a group of threads designated to perform the processing, wherein the group of threads comprises execution threads of two or more packet processing engines (paragraphs [0041] and [0041]; the group ID is the mask; 406a - 406c and 330 can all be viewed as a packet processing engine).

(10) with regard to claims 18, 22, 26, 32, 34, 38:

Potter JR. further discloses determining a second execution thread of the other one or more execution threads that is associated with a second sequence number that is less than sequence numbers associated with each other of the other one or more execution threads; and transmitting an election signal to the second execution thread (paragraph [0049] and [0052]; 402b is another execution thread which has a different sequence number than that of thread 402a and the same determination process applies to all of the threads for determining the processing order)

(11) with regard to claims 20, 23:

Potter JR. further discloses swapping out the thread if it is determined that the sequence number is not less than the sequence numbers associated with the respective other one or more execution threads (the threads with sequence numbers not matching the current head-of-line sequence number are processed later than the one with the head-of line sequence number).

(12) with regard to claims 28, 29:

Potter JR. further discloses the another one or more threads are designated as stalled threads from which respective sequence numbers were previously received (the threads whose respective sequence numbers are not the current head-of-line sequence number are viewed as stalled threads because they are not processed until the threads with closer to current head-of-line sequence numbers are processed).

(13) with regard to claim 37:

Potter JR. further discloses receiving a sequence number associated with an execution thread (paragraph [0049] and [0052]; 402a is one execution thread);

determining whether a processing sequence associated with the sequence number is locked and transmitting an election signal to the execution thread if it is determined that the processing sequence is not locked (the sequence number being determined as the head-of-line sequence number is considered as it is not locked; the sequence numbers that are not the current head-of-line sequence number are considered as locked; "HOL" status notification signal is an election signal).

(14) with regard to claim 39:

Potter JR. further disclose a network processor (300 on Fig. 3) comprising the packet processing engine, the sequence number register, and the sequence election unit.

(15) with regard to claim 40:

Potter JR. further disclose the network processor further comprises two or more packet processing engines (330 on Fig. 3).

6. Claims 41 - 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Potter JR. (US 2004/0187112) in view of Brown et al. (US 5,916,309) and further in view of Glasco et al. (US 2003/0233388).

(1) with regard to claim 41:

Potter JR discloses a system comprising: a packet processing engine (330 on Fig. 4) to provide a plurality of execution threads (402a — 402c on Fig. 4); a sequence number register (404 on Fig. 4) to provide a respective sequence number to one or more of the plurality of execution threads, wherein the sequence number is further

associated with one of a plurality m-packets (paragraph [0048], [0049] and [0052]; every single packet of packets 424 to be registered by the dispatcher with the order manager is a m-packet); and a sequence election unit (408 on Fig. 4) to elect one of the one or more of the plurality of execution threads based on sequence numbers provided to the one or more of the plurality of execution threads (paragraph [0049] and [0052]).

Potter JR. does not disclose an m-packet comprises a network packet divided into a plurality of m-packets, wherein a size of each of the plurality of m-packets is equal to an element size, and wherein the element size is associated with a receive buffer.

Brown et al. discloses an m-packet comprises a network packet divided into a plurality of m-packets, wherein a size of each of the plurality of m-packets is equal to an element size, and wherein the element size is associated with a receive buffer (Fig. 2, reception buffers 51 – 58; also see column 9, line 56 - column 10, line 20; when multiple packets are transmitted within a time interval which can be viewed as one network packet consisting of smaller individual packets, the individual packets are separated upon reception and each is stored in an individual receive buffer, thus the size of each individual packet is associated with the receive buffer).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Potter JR. to implement multiple reception buffers as taught by Brown et al in order to make packets transmission and reception more efficient.

Potter JR. also does not disclose a Double Data Rate memory.

Glasco et al. teaches using Double Data Rate memory (paragraph [0022]; memory 206a – 206d).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system disclosed by Potter JR. with the teaching of Glasco et al. to use Double Data Rate memory in order to achieve greater data transfer rate and thus improve efficiency of the system.

(2) with regard to claim 42:

Potter JR. further disclose a network processor (300 on Fig. 3) comprising the packet processing engine, the sequence number register, and the sequence election unit.

(3) with regard to claim 43:

Potter JR. further disclose the network processor further comprises two or more packet processing engines (330 on Fig. 3).

(4) with regard to claim 44:

Potter JR. further discloses receiving a sequence number associated with an execution thread (paragraph [0049] and [0052]; 402a is one execution thread); determining whether a processing sequence associated with the sequence number is locked and transmitting an election signal to the execution thread if it is determined that the processing sequence is not locked (the sequence number being determined as the head-of-line sequence number is considered as it is not locked; the sequence numbers that are not the current head-of-line sequence number are considered as locked; “HOL” status notification signal is an election signal); determining a second execution thread of

the other one or more execution threads that is associated with a second sequence number that is less than sequence numbers associated with each other of the other one or more execution threads; and transmitting an election signal to the second execution thread (paragraph [0049] and [0052]; 402b is another execution thread which has a different sequence number than that of thread 402a and the same determination process applies to all of the threads for determining the processing order).

Response to Arguments

7. With regard to the 101 rejection of claims 9 - 12, 21 - 23, 31 and 32, Applicant contends that all these claims relate to a "medium storing program code, the program code executable to" and therefore they recite statutory subject matter. The Examiner respectfully disagrees. Merely reciting "a medium storing program code" without reciting that the medium is a computer-readable medium and the program code is to be executed by a computer to perform its functionalities does not constitute statutory subject matter.

8. Applicant's arguments with regard to the newly amended independent claims 1, 9, 13, 21, 24, 31, 33 and 41 are moot because the amendments have necessitated new ground(s) of rejections.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BO HUI A. ZHU whose telephone number is (571)270-1086. The examiner can normally be reached on Mon-Thur 10am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571)272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2619

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BZ
Examiner
June 9, 2008

/Hassan Kizou/
Supervisory Patent Examiner, Art Unit 2619